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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/582,971	07/07/2000	STEPHEN ROY PENNINGTON	60319-010	4635

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EXAMINER	
WESSENDORF, TERESA D	
ART UNIT	**PAPER NUMBER**
1639	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/08/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	09/582,971	PENNINGTON, STEPHEN ROY	
	Examiner	Art Unit	
	T. D. Wessendorf	1639	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 November 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9,17-21,28-31 and 37-46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9, 17-21, 28-31 and 37-46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

Claims 1-9, 17-21, 28-31 and 37-49 are pending and under examination.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-9, 17-21, 28-31 and 37-49, as amended, are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. (This is a new matter rejection).

The entire claimed method steps (A)-(E) is not supported in the as-filed specification. For example step (A) of subjecting the at least one target protein to MS and then using said target proteins to select at least one antibody thereto; screening said antibody by adding ***one or more proteins including at least one***

target proteins to at least one antibody, said antibody being used individually.

Applicants in the REMARKS made on 11/3/2006 state that support could be found at pages 4-7 and in Example 1.

A review of the cited sections does not reveal support for the present claimed method. The as-filed specification recites different embodiments and unclear as to the support for the present claimed method that corresponds to the different embodiments.

Claim Rejections - 35 USC § 112, second paragraph

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-9, 17-21, 28-31 and 37-49, as amended and added, are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In view of the amendments to the claims, the rejection of the claims under this statute in the last Office action had been partly overcome. The rejections that have not been overcome are reiterated below.

1. Claim 1 is confusing as to the scope of the claimed method. There appears to be a lack of correspondence of the steps and/or elements of each step in the method. This is made more confusing as to the reference made to "proteins" i.e., whether the "target proteins" are different from the "one or more proteins" or their differentiating characteristics, if any. It is not clear as to the relevance/role of adding the "one or more proteins" including the target proteins in step © (i) in the screening of antibody. The claimed method does not make sense.

2. The expression "mass spectrometry ***based*** characterization is confusing. It is not clear as to the manner the characterization is based on MS. Is the intent to characterize the target protein by its mass spectrometry? The phrase "each antibody being used individually" in step (C) is ambiguous as to its meaning within the context of the claim. [The numerous amendments to the claims do not make sense.]

3. Claim 5 "at least one protein affinity ligand" would broaden the base claim recitation to an antibody which is the affinity ligand. This rejection has similar import to claim 29. Claim 29 is grammatically incorrect.

4. Claim 6 is unclear as to the further "use of sequence tag data" as the base claim does not appear to recite any data

and unclear as to how the sequence tag data applies to the MS. This rejection has similar import to claim 30.

5. Claim 47 is unclear as to how it further limits the base claim 47, which appears not to recite for antibody generation. This rejection has similar import to claims 48 and 49. It is not clear as to the "corresponding gene" recited in claim 48 i.e., in what sense it corresponds to a gene.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at

> the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-5, 17 and 28-29 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Nelson et al (US 2001/0019829), as reiterate below.

Nelson discloses at [0149] a method of determining the presence of one or more specific antibodies in sera. The method involves retrieval of a portion of the general antibody population present in a sample, and use of this portion to construct the affinity reagent. The affinity reagent is then screened with specific antigens. Antigens are retained by the affinity reagent if the specific antibody is present in the original sample, and will register in the mass spectrum (indicating the presence of the specific antibody). Nelson discloses at [0150] that the specimen was that of blood serum drawn from a rabbit immunized against the toxin, alpha-cobratoxin. The affinity reagent was prepared by mixing of protein A supported on 6% agarose beads with a solution containing the serum and incubated for two hours (gentle agitation at room temperature). At [0151] preparation containing multiple antigen species was prepared and MALDI mass spectrometrically analyzed. The resulting mass spectrum in FIG.

13 shows multiple signals corresponding to multiple antigens in the preparation. At [0152] it is disclosed that the affinity reagent was then incubated with the preparation following similar mass spectrometric immunoassay protocols already described to see which of the antigen species from the preparation of screening antigens were retained. The resulting mass spectrum is shown in FIG. 14. A signal at the mass-to-charge ratio of alpha-cobratoxin indicates the retention of alpha.-cobratoxin by the affinity reagent, which in turn indicates the presence of anti-.alpha.-cobratoxin present in the serum from which the affinity reagent was made. Accordingly, the method of Nelson anticipates or renders obvious the claimed method. [MPEP 2116.01 states that the rejection under 102/103 is proper since the claim is confusing and subject to numerous interpretations].

Response to Arguments

Applicant states that claim 1 of the present application positively recites a comparison step (E), specifically providing the step of "comparing said first mass spectrometry based characterization and said second mass spectrometry based characterization of said eluted target protein to determine said at least one antibody that binds to said at least one target protein". Nelson cannot meet this limitation, among others.

In response, it would be inherent or apparent that the target proteins, unbound, have an inherent or natural MS characterization pattern (i.e., alone) prior to its interaction with an antibody. Hence, it is considered that one can make a comparison of the single or pure target with the bound target MS pattern.

Applicant states that the Nelson reference proposes to use mass spectrometry to identify the mere presence of an antibody within a serum. The Nelson reference does not provide for or even suggest the characterization and identification of target proteins to determine antibody specificity for binding.

Because the claims is subject to several interpretation hence, it is considered that the claimed antibody is in a serum as it binds to the antigen and as stated by applicant below is not purified.

Claims 1-9, 17-21, 28-31 and 37-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nelson in view of Xu (2003/0157089) and Zsebo et al (6,759,215) for reasons repeated below.

Nelson does not disclose a sequence tag data. However, Xu discloses at [0823] that it is possible to obtain a full length cDNA sequence by analysis of sequences provided in an expressed

sequence tag database, such as that available from GenBank. Searches for overlapping ESTs may generally be performed using well-known programs (e.g., NCBI BLAST searches), and such ESTs may be used to generate a contiguous full-length sequence. Full-length DNA sequences may also be obtained by analysis of genomic fragments. Xu discloses at [0946] that the assay is performed in a flow-through or strip test format, wherein the binding agent is immobilized on a membrane, such as nitrocellulose. In the flow-through test, polypeptides within the sample bind to the immobilized binding agent as the sample passes through the membrane. [0958] discloses Rosettesep that is used to enrich cells directly from a blood sample and consists of a cocktail of tetrameric antibodies that target a variety of unwanted cells and crosslinks them to glycophorin A on red blood cells (RBC) present in the sample, forming rosettes. It is then centrifuged over ficoll. Zsebo discloses at Example 2, the use of formic as eluting agent. Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ nitrocellulose or Ficoll or formic in the method of Nelson since these reagents are conventionally employed in mass spectrometry as taught by Xu and Zsebo. One would have been motivated to use this material depending upon the desirability or advantageous effect it has on the components under analysis.

Response to Arguments

Applicant believes that the rejections have been rendered moot in view of the provided claim amendments. Applicant believes that the Nelson reference fails to meet the limitations of the claims as suggested above. Moreover, even if the combination of the cited references is proper, the combination of the Xu and Zsebo references with the Nelson reference fail to meet the limitations of the claims as amended and as discussed above

The response above is incorporated herein since applicant's response primarily relied on Nelson. Thus, even with the amendments to the claims, the art rejection applies.

No claim is allowed.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to T. D. Wessendorf whose telephone number is(571) 272-0812. The examiner can normally be reached on Flexitime.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

T. D. Wessendorf
Primary Examiner
Art Unit 1639

tdw
February 2, 2007